MN00018

MAGNET TENSION UNIT

MT-20 (MT-20BC)
MT-100 (MT-100BC)
MT-300 (MT-300BC)
MT-800 (MT-800BC)
MT-2000 (MT-2000BC)

OPERATION MANUAL

TANAKA SEIKI CO., LTD.

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1. SPECIFICATIONS

MACHINES / ITEM	MT-20 (MT-20BC)	MT-100 (MT-100BC)	MT-300 (MT-300BC)	MT-800 (MT-800BC)	MT-2000 (MT-2000BC)
tenstion (g)	5～20	15～100s	50～300	100～800	300～2000
wire diameter	φ0.005 less	φ0.04～0.14	φ0.1～0.2	φ0.14～0.5	φ0.5～0.8
winding speed (m/sec)	0～10	←	←	←	←
dimensions (mm)	W H D				
	140x100x70	←	←	155x125x85	160x150x85
	(〃x140x 〃)	(←)	(140x146x70)	(175x165x85)	(207x150x85)
weight(g)	500	530	540	1170	1700
	(740)	(770)	(850)	(1650)	(2200)

* inside ( ) is for the machine attached back tenstion control unit(BC)

2. NAME OF PARTS

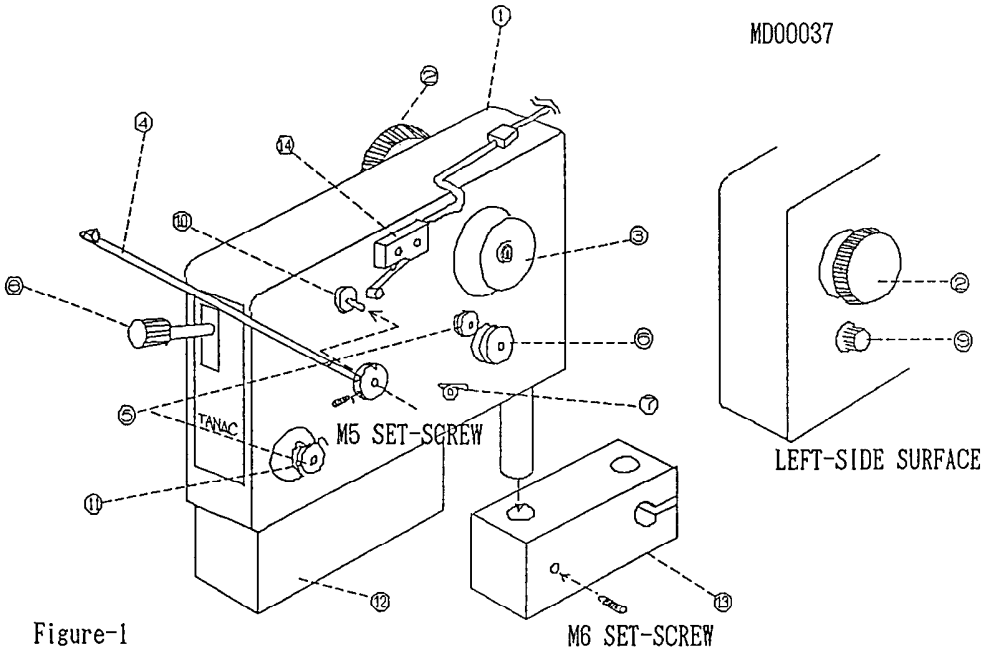

Figure-1

① MAIN FLAME
② DIAL
③ PULLEY
④ TENSION BAR
⑤ MIDDLE PULLEY
⑥ WIRE HOLD
⑦ WIRE GUIDE
⑧ BACKTENSION ADJUSTMENT KNOB
⑨ PRETENSION ADJUSTMENT KNOB
⑩ TENSION BAR SHAFT
⑪ WIRE GUIDE MOUNT
⑫ BACKTENSION CONTROL(Only for the machine attached BC)
⑬ MAIN FLAME MOUNTING HARDWARE
⑭ WIRE BREAK SWITCH

3. USAGE

3 - 1 SETTING THE TENSION BAR (see the Fig - 1)

Insert the tension bar④ to the tension bar shaft⑩, and secure them with the M4 screw set.

3 - 2 SETTING THE MAIN FLAME (see the Fig - 1)

Put the main flame① into the main flame hard ware⑬ (fix into the babbin stand (option)) towards the winding machine correctly and secure them with the M6 screw set.

3 - 3 HOW TO THREAD THE WIRE (see the Fig - 2)

Thread the wire as Figure - 2 .
Open the wire hold⑥ with pushing the pretension adjustment knob, and then put the wire between the felt.

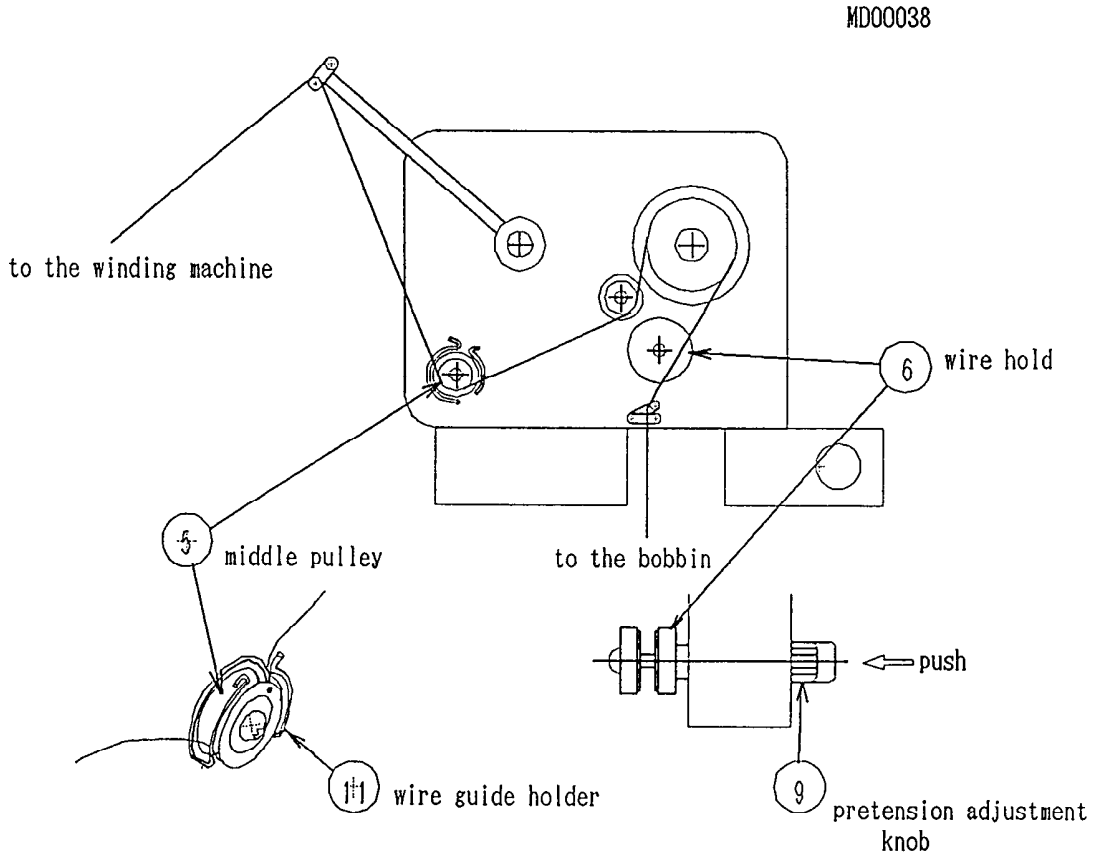

Figure - 2

3 - 4 PRETENSION ADJUSTMENT

1. The pretension strength can be adjusted with the pretension adjustment knob ⑨. RIGHT turn is to be TIGHT, and LEFT turn is to be LOOSE.

2. The wire should be held slightly as not coming off from the wire hold⑥.
   CAUTION: Be careful if the wire is held too tight, the tension will be unstable, and will cause a felt friction.
   When it becomes so, roll the wire hold⑥ with hands (see Fig - 3), and put the wire between a new part of the felt.

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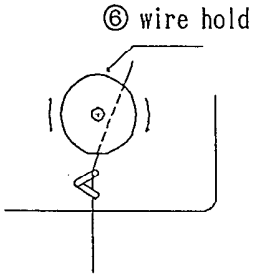


3 - 5 TENSION ADJUSTMENT

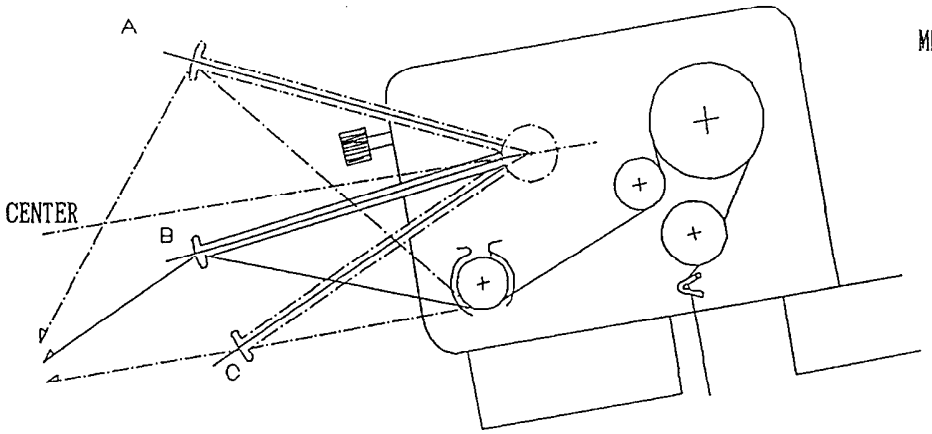
1. After confirming the proper wire hanging as Fig - 2, mesure the tension value by pulling the wire towards the winding machine. However, if this back tension is too tight for pulling the wire, the tension bar④ does not move down, and the pulley gets the break. To avoid this, turn the back tension knob towards the L direction to reduce the tension.

2. The tension will be adjusted by turning the dial②. When the tension value is more than its desired, turn the dial to the left side, when the value is less than its desired, turn it to the right. The graduation on the dial should be used for the adjustment to fix the aim. Be careful, while winding, to dial CCW(reducing the power tension) direction causes breaking down the pulley③ and also this brings the wire to break.

3 - 6 BACK TENSION ADJUSTMENT

1. The back tension is applied by the reactionary strength of tension bar④, and is working for removing the looseness of wire. After confirming a termination of the adjustment for both tension and pretension, and also the BC(back tension control) should be ON (for the machine attached BC only), pull the wire towards the the winding machine (winding actually can be excuted), and check the angle of the tension bar④.

2. The A in Fig-4, the back tension is too tight, please roll the back tension knob⑧ towards the L-direction to reduce it. For C, the tension is too loose, please roll the back tension knob⑧ towards the H-direction to make it tight, and then adjust them as B in the picture. The red line on the back tension scale(except MT-800) locating behind the main flame can be moved by turning back tension adjustment knob. Please use it for an adjustment.



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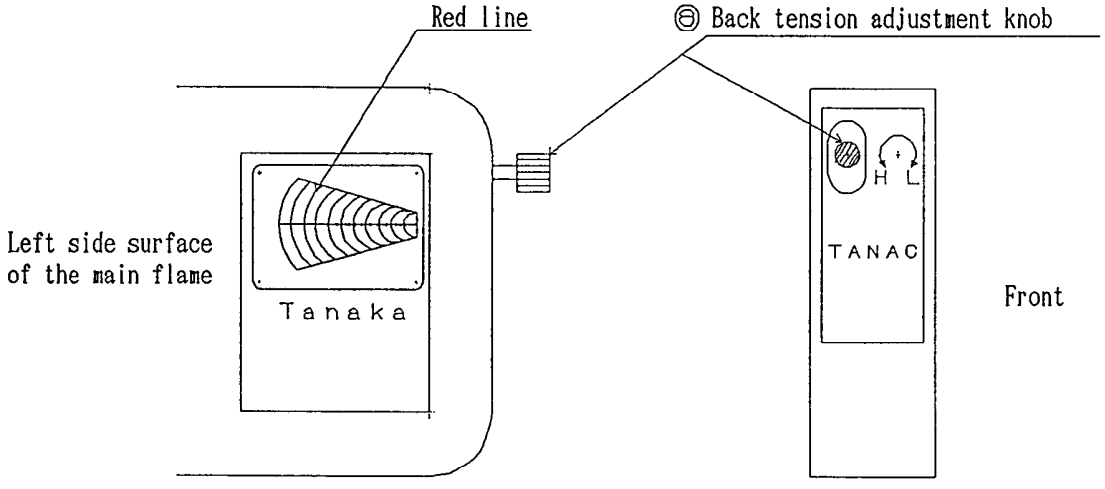

Figure - 4

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4. FOR THE FINE WIRE WINDING

When the winding by the MT-20 (MT-20BC) cannot be carried out due to the reasons as follows, please do not hook the wire to the pulley③; in stead, hook the wire to the middle pulley⑤ directly as figure 5 and then wind it.

① For less than 0.03 mm wire. (if the wire break does not occur, normal winding methoed can be used)
② In the winding making the hastily accelerate or stopping, the wire break or the looseness of the wire will be occured.

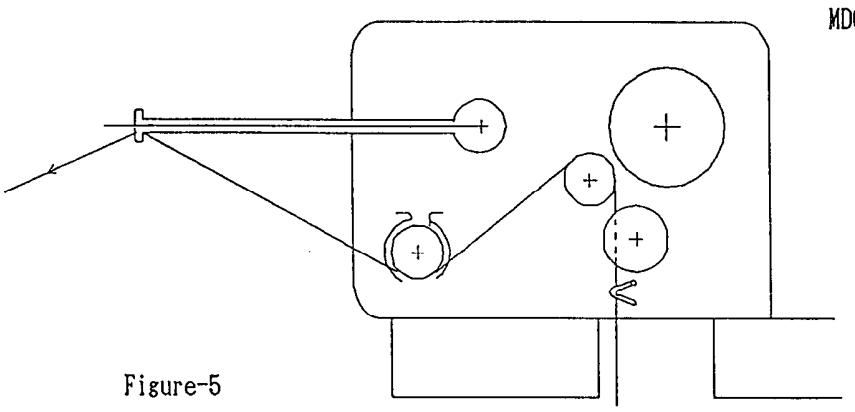

Figure-5

However, in this method, the tension should be adjusted with the pretension adjustment knob⑨. (see the 3 - 5 adjustment of the pretension)

5. BACK TENSION CONTROL(BC)

In the automatic coil winding machine, owing to both the winding and the wrapping are carried out by passing the wire through the nozzle, if its wire wrapping and pulling are carried out with the strong back tension like winding, the wire may get scratched on its surface or get broken by the nozzle tip. Therefore, when the wire wrapping or pulling are carried out, its back tension should be less than the winding's.

Because of the reasons above, the back tension control enbles to switch the back tension (the reactionary strength of the tension bar) into two steps. According to the winding program, the back tension strength can be switched either tight or loose for winding.
The back tension strength can be switched with turning ON or OFF the external air pressure (5kg/cm).
(the air mouth is M5 hole of the bottom surface located the BC unit⑫)

ON . . . . Back tension tight
OFF . . . . Back tension loose

Use either ON or OFF depends on each situation.

6. HOW TO ADJUST THE TENSION UNIT (8-24stands)

6 - 1 Setting up all Tension Units to the bobbin stand with the same angle.

6 - 2 Use only one tension unit, and find a best strength for both tension and back tension by its trial winding.
(refer to the pretension, tension, and backtension adjustment)

If both tension and back tension balances are matched, the C in the Figure 6 will be centered as the range of the tension bar.

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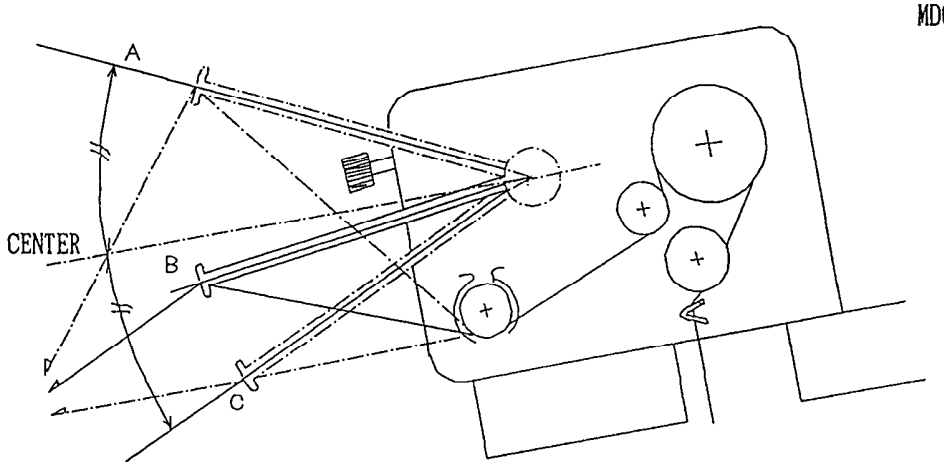

Figure-6

6 - 3 Proving the Back Tension.
The easiest way to prove an even balance of the back tension is to use a weight. (see Fig-7)

a) Turn ON the back tension with the manual switch.
b) Find a suitable weight for the tension bar④ to be horizontal balance to the original tension unit(being adjusted by the trial winding).
c) When all other tension bars ④ are hanging those weights, fix their angles to make all the same as the original tension bar by using the adjustment knob.

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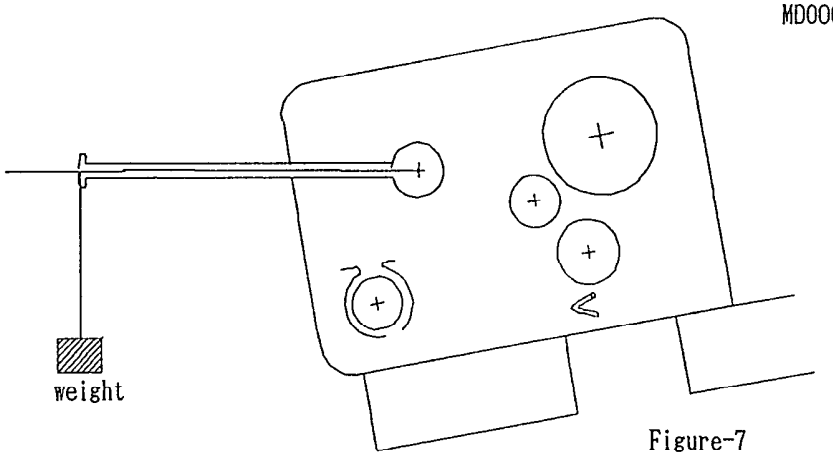

Figure-7

6 - 4 Adjusting for the perfect tension value

a) Fix all the other values of the tension adjustment dials to the value of original adjustment dial②.

b) While excuting all spindles' winding, adjust their angles of the tension bars accurately to be the same angle as the original unit's value by using the tension adjustment dial②.
If all back tensions are adjusted the same, the angle of the tension bar④ shows its strength (strong or weak), therefore, by adjusting the tension bar's angle with its dial, certain tension should be kept all the time.

c) When the tension is too loose (Fig-8, A), turn the dial to clockwise(CW). When it is too strong (Fig-8, C), turn it to counterclockwise(CCW).
CAUTION: if the dial② is turned to counterclockwise CCW while winding, the tension pulley will get a break and it causes a wire break.

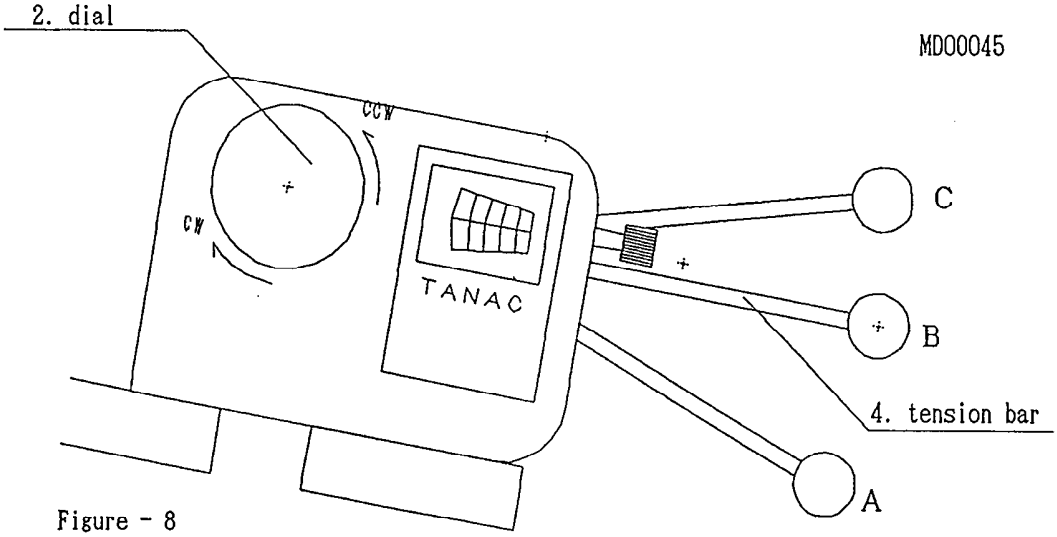

Figure - 8

6 - 5 When all the tension units are adjusted correctly, each tension arm goes up and down with almost the same angle during winding. After adjusting the back tension, the tension arm angle will be the base of the tension adjustment, therefore, until another winding program is used, please do not change the back tension strength.

7. TENSION UNIT MAINTENANCE

How to change the Felt of the Wire Hold. (see Fig-1)

a) If the wire holder knob⑨ is turned to conterclockwise CCW(loose), at that same time when the wire hold knob will be taken off, the outer felt of the wire hold⑥ will be also come off from the unit and will be aparted from the inner felt.

b) After changing each felt, be sure to adjust the pretension again.